

Gay (G.W.)

THE PLASTER-POSTERIOR SPLINT

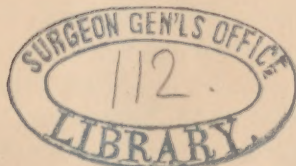
IN THE TREATMENT OF

FRACTURES OF THE LEG.

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THE PLASTER-POSTERIOR SPLINT IN THE TREATMENT OF FRACTURES OF THE LEG.

THE ideal dressing for a broken leg must be simple, comfortable, cheap, readily obtained, easily applied and removed, and must allow a frequent inspection of the limb without disturbing the patient. It must be applicable to all cases; capable of correcting any and all deformities, and of retaining the fragments in the desired position for an indefinite length of time; not liable to produce abrasions or other mischief; and once properly adjusted it should require little attention during the progress of the case.

Such an appliance has never to my knowledge been brought to the notice of the profession, but one that seems to combine more of the desirable qualities than any other is the plaster-posterior splint, which has now been in constant use at the City Hospital for several years, and which has become a standard method of treatment in that institution.

The splint is made of sheet wadding, a coarse muslin or crinoline, and plaster of Paris. It may be applied as follows:—The leg is washed and dried, and enveloped in the cotton, which has been torn into strips about four inches wide, sewn together, and made into rolls like an ordinary bandage. Enough should be used to protect the bony processes and tendo-Achillis from pressure.

A single layer of the gauze large enough to extend from the toes to above the knee is to be placed beneath the limb, closely wrapped about it, and cut so as to completely sur-

round it, with the exception of a space about an inch wide on the anterior aspect. This piece serves as a pattern by which the other layers, six or eight in all, are to be made. The muslin is to be slashed on each side opposite the point of the heel to allow the foot-piece to be brought to a right angle without forming clumsy folds. Other slashes may be required to make the dressing fit snugly and smoothly, and to prevent wrinkles.

Fresh plaster of Paris mixed with warm water to the consistency of cream is now to be thoroughly rubbed into each layer of the gauze, and the whole applied to the limb at once, moulded closely and carefully to it, and firmly secured with a common bandage. The fragments are to be held in their proper place until the splint has become sufficiently firm to prevent displacement, which with good plaster is not over fifteen or twenty minutes. In some cases this object may be accomplished by means of sand bags or pillows. In a few hours the outer bandage may be removed, the cotton wadding cut open with scissors, and the appliance is complete, and may be worn with comfort for several weeks.

A certain amount of judgment and tact is required to use this dressing satisfactorily, but no more than is necessary in the treatment of fractures of the leg by any other method. A little experience will enable any one to become familiar with the practical details of applying this bandage, and the field of its usefulness will be found to increase in proportion to one's familiarity with it.

Particular attention is called to a few points in adjusting this plaster case. The greatest pains should be taken to hold the fragments in their proper position until the plaster sets, otherwise they may get displaced, when a new bandage will be required, or a deformity will be the result. The foot should be placed at nearly a right angle to the leg, especially if the fracture is at, or near, the ankle joint. Little padding is required except about the heel and malleoli. Care should

be taken that no wrinkles or folds be allowed to press upon the limb. The splint should reach the metatarso-phalangeal articulation below, and, as a rule, should extend above the knee, particularly in children, to prevent twisting of the fragments in their long axis, or, in other words, to hold the foot in its natural relation to the knee. It should embrace about three-fourths of the circumference of the limb in order to give the desired support, and to retain itself in position.

This dressing is especially adapted to cases of simple fractures of the tibia, or of the tibia and fibula, which are not attended with serious injury to the soft parts, and in which no great amount of force is required to maintain the fragments in their proper place. It is very convenient in the treatment of these injuries in children. Applied under ether it is firm and solid before the patient awakes, and does not require frequent tinkering during recovery, as do many other appliances. The advantages of a dressing which does away with the pain and fright so commonly attending the ordinary treatment of fractures in children cannot be too highly appreciated.

Certain cases of compound fracture of the leg can also be satisfactorily treated with the plaster tray, if the soft tissues are not too extensively injured, and if the wounds be so situated that they can be exposed through apertures in the splint for purposes of cleanliness and local applications. For this class of injuries the bandage may be strengthened with strips of hoop iron, lined with oiled silk, and kept in position by means of straps with buckles.

Properly applied to the above mentioned classes of injury the plaster-posterior splint is comfortable and efficient; it is self-retaining; it holds the fragments firmly in position; it allows the patient to be moved, or to move himself without danger of disturbing the fracture; it permits the parts to be readily examined; being opened throughout its entire length the bandage accommodates itself to the swelling of the limb

without danger of strangulation ; it can be applied immediately after the accident, there being no necessity for waiting until the inflammatory stage has subsided ; it can be removed and readjusted with ease, and can be worn indefinitely.

The same rule in regard to opiates obtains here, as in all fractures, namely, they should never be given until the physician is reasonably certain that the dressings are doing no harm.

Contrary to the teaching of some authorities, the writer believes in frequent examinations of broken limbs until the fragments are so closely joined that they cannot be easily displaced. It must be a very exceptional case in which union is prevented by too much manipulation. Broken ribs and collar bones, though necessarily subjected to constant motion, almost always unite well. So do fractures complicated with delirium tremens, or excessive restlessness, or insubordination, in which the parts often sustain great violence.

If the physician would avoid deformed limbs, splint sores, and lawsuits, he must, by personal examination, keep himself constantly informed as to the position of the broken bones and the condition of the soft parts, even at the expense of considerable discomfort to the patient. Temporary pain caused in this manner is of little importance, compared to the life-long mental and physical distress which may result from an unnecessary deformity.

The susceptibility to pain differs so greatly in individuals that it is not safe to rely wholly upon their sensations in determining the compression of a bandage. I once saw a case of gangrene of the foot, the result of a tight bandage, in which there was never any suffering. The only safety lies in watching the circulation of the toes, and in making careful examinations of the limb, being guided to a certain extent by the sensations of the patient. It is to be remembered that some persons with a fracture will always complain

of pain, whatever treatment is followed. As these patients generally eat and sleep well, and remain in good condition, opiates are to be given sparingly, if at all.

The position of the fragments encased in the apparatus under consideration can frequently be determined by simply sliding the fingers along inside the splint without removing it. But to thoroughly examine the parts the tray must be forcibly sprung open, and the leg carefully lifted out.

As plaster of Paris is brittle, and not elastic, frequent removals of the dressing tend to weaken it. Whenever it becomes loose from this cause, or from wasting of the limb, it may be tightened with straps, or a new one may be applied. In many instances one bandage is sufficient for the entire treatment.

It is not necessary to weary you with details of cases which have been treated by the above method. Suffice it to say that not infrequently this dressing is applied to fractures of the leg at the City Hospital within twenty-four hours of the accident, and not disturbed until the fragments are firmly united and the recovery is complete.

The results obtained with this method of treatment are probably no better than those following the use of side splints, fracture boxes, etc.; but there is a great saving of time and labor to the surgeon. There is not that necessity for a frequent readjusting of splints and bandages, which is so essential with most other appliances.

The writer wishes it to be distinctly understood that this dressing is not adapted to all varieties of fracture of the leg. For example, some cases of Pott's fracture accompanied by marked eversion of foot, requiring strong pressure to restore and retain it in its proper position, can perhaps be better treated by other methods. So likewise may those bad cases of oblique fracture of the tibia, the fragments of which override each other to a great extent. Severe contusions of the soft parts should not be subjected to pressure until all danger

of ulceration and sloughing has passed. The presence of blebs or blisters, however, does not necessarily preclude the use of this dressing, as they may often be treated through an opening in the plaster.

It has always seemed to me that those physicians who permit their patients to move about on crutches a few days after an immovable bandage of any kind has been applied to a recent fracture of the lower extremity, allow their enthusiasm to get the better of their judgment. The complications liable to occur during the repair of broken bones are so numerous, and at times so insidious, and suits at law for malpractice are so common, that in my opinion no adult should be allowed to move about until there is fair union of the tibia and fibula, which usually requires from four to six weeks, and very little weight should be put upon the limb for some time longer. There can be no doubt that deformity occasionally takes place in these cases from the patient's getting up too soon, while the union is green, thereby allowing the fragments to gradually yield under the weight of the body.

Those cases of fracture of the lower end of the fibula and rupture of the deltoid or internal lateral ligament of the ankle, accompanied with an outward dislocation of the foot, are often very difficult to manage, and require a longer confinement than any other simple fracture of the leg, three or four months being necessary in some instances to ensure sufficient repair to prevent future deformity. In some of these cases it is impossible to avoid a little eversion of the foot, whatever may have been the treatment, and however long it may have been continued. The writer has seen a recurrence of the dislocation after three months' confinement. He has also seen two or three cases in which the inner malleolus had been exposed by ulceration due to a return of the deformity, after a fair union had apparently taken place. He would never permit a person weighing one hundred and

fifty pounds to bear his weight upon a Pott's fracture under three months, and the greater the weight, the longer should be the period of rest.

A different line of treatment, however, is called for in some cases of fracture of the shaft of the long bones, more especially of the femur. When the union is imperfect at the end of three months or thereabouts, nothing does so much good as to encase the limb in an immovable bandage and get the patient up on crutches. The local irritation which results from this practice tends to excite the reparative process to that degree, that the fragments become firmly united within a comparatively short time.

In conclusion allow me to say, that while I do not think the plaster-posterior splint is adapted to all fractures of the leg, yet in the classes of cases specified in this paper I most heartily recommend it, hoping that a fair trial will convince some surgeons, as it has the writer, that the dressing combines more good qualities, and fewer bad ones, than any of the common appliances in use at the present time.

[A practical demonstration of the plaster-posterior splint was made before the Society by Dr. R. A. Kingman, of Boston.]

